MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, **2015/ 2016**

BPO2064 – PRODUCTION & OPERATIONS MANAGEMENT

(All sections / Groups)

29 FEBRUARY 2016
2.30 p.m to 4.30 p.m
(2 Hours)

INSTRUCTION TO STUDENT

1. This Question paper consists of 5 pages including cover page with **TWELVE** Questions.

2. Student **MUST** answer **ANY TEN** questions ONLY and the distribution of the marks for each question is as given.

3. Student is allowed to use non-programmable calculator in the examination.

Answer **ANY TEN** questions only. All questions carry **EQUAL** marks.

(10 x 10 = 100 marks)

1. Chuck Sox makes wooden boxes in which to ship motorcycles. Chuck and his three employees invest a total of 40 hours per day making the 120 boxes.
   a. What is their productivity?
   b. Chuck and his employees have discussed redesigning the process to improve the efficiency. If they can increase the rate to 125 per day, what will be the new productivity?
   c. What will be their unit increase in productivity per hour?
   d. What will be their percentage change in productivity?

   (4 x 2.5 = 10 marks)

2. Describe how an organization's mission and strategy have different purposes?

   (10 marks)

3. Task time estimates for the modification of an assembly line at Jim Goodale's Carbondale, Illinois, factory are as follows:

Activity	Time (in minutes)	Immediate predecessor
A	6.0	-
B	7.2	-
C	5.0	A
D	6.0	B, C
E	4.5	B, C
F	7.7	D
G	4.0	E, F

   i. Draw the project network

   (2.5 marks)

   ii. Identify the critical path and the project duration.

   (5 marks)

   iii. Calculate the total slack

   (2.5 marks)

4. How is PDCA cycle related to Quality circle in continuous improvement?

   (10 marks)

Continued..

5. Emergency call to the 911 system of Gainesville, Florida for the past 12 weeks are shown in the following table:

Week	1	2	3	4	5	6	7	8	9	10	11	12
Calls	50	35	25	40	45	35	20	30	35	20	15	40

i. Compute the exponentially smoothed forecast of calls for each week. Assume an initial forecast of 50 calls in the first week and use $\alpha = 0.2$. What is the forecast for week 13?

(6 marks)

ii. Compute MAD and MSE.

(4 marks)

6. The accounts receivable at Rick Wing Manufacturing has been having difficulty getting customers to pay the full amount of their bills. Many customers complain that the bills are not correct and do not reflect the materials that arrived at their receiving docks. The department has decided to implement SPC in its billing process. To set up control charts 10 samples of 50 bills each were taken over a month's time and the items on the bills checked against the bill of lading sent by the company's shipping department to determine the number of bills that were not correct. The results were:

Sample No.	No. of incorrect bills
1	6
2	5
3	11
4	4
5	0
6	5
7	3
8	4
9	7
10	2

Determine the value of p-bar, the mean fraction defective. Then determine the control limits for the p-chart using a 99.74% confidence level. Is this process in control?

(10 marks)

7. What are options available to the operations manager to increase the service productivity through service design? Elaborate them with examples.

(10 marks)

Continued..

8. The Action Toy Company has decided to manufacture a new train set, the production of which is broken into six steps. The demand for the train is 4800 units per 40-hour work-week:

Task	Performance time (sec)	Predecessors
A	20	-
B	30	A
C	15	A
D	15	A
E	10	B, C
F	30	D, E

i. Given the demand, what is the desired cycle time for this operation? (2 marks)

ii. What is the theoretical minimum number of workstations? (2 marks)

iii. How much total idle time is present each cycle? (2 marks)

iv. What is the efficiency of the assembly line? (4 marks)

9. Define *Supply Chain Management.* What are its objectives? Name any five specific strategies and explain them. (10 marks)

10. Southeastern Bell stocks a certain switch connector at its central warehouse for supplying field service offices. The yearly demand for these connectors is 15000 units. Southeastern estimates its annual holding cost for this item is to be RM25 per unit. The cost to place and process an order from the supplier is RM75. The company operates 300 days per year and the lead time to receive an order from the supplier is 2 working days.

i. Find the economic order quantity (3 marks)

ii. Find the annual holding costs (3 marks)

Continued..

iii. Find the annual ordering costs

(3 marks)

iv. What is the reorder point?

(1 mark)

11. The demand for subassembly S is 100 units in week 7. Each unit of S requires 1 unit of T and 2 units of U. Each unit of T requires q unit of V, 2 units of W and 1 unit of X. Finally each unit of U requires 2 units of Y and 3 units of Z. One firm manufactures all items. It takes 2 weeks to make S, 1 week to make T, 2 weeks to make U, 2 weeks to make V, 3 weeks to make W, 1 week to make X, 2 weeks to make Y and 1 week to make Z.

i. Construct a product structure. Identify all levels, parents and components.

(5 marks)

ii. Prepare a time-phased product structure.

(5 marks)

12. Discuss how the Japanese word for ***card*** has application in the study of JIT.

(10 marks)

END OF PAPER